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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/070,501	03/07/2002	Vladimir Kliatzkin	P-2684-US	7024
27130	7590	10/25/2004		
EITAN, PEARL, LATZER & COHEN ZEDEK LLP 10 ROCKEFELLER PLAZA, SUITE 1001 NEW YORK, NY 10020			EXAMINER ALEJANDRO, RAYMOND	
			ART UNIT 1745	PAPER NUMBER

DATE MAILED: 10/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/070,501

Applicant(s)

KLIATZKIN, VLADIMIR

Examiner

Raymond Alejandro

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 September 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 28-46 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 28-46 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 09/13/04 has been entered.

This action is in replying the abovementioned RCE and its related amendment. The applicant has overcome the objections, the art rejection and most of the 35 USC 112 rejections. Refer to the foregoing amendment for more details on applicant's refutation arguments. However, the claims are newly rejected over art as seen below and for the reasons of record:

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 44-45 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

3. Claim 44 is indefinite as it depends from itself. Thus, claim 44 and its dependant claims are indefinite as they fail to further limit the subject matter of a previous claim.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 28-29, 34-36 and 41-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Honda et al 5580676 in view of Pyszczel et al 5756229.

The present application is directed to a battery cell wherein the disclosed inventive concept comprises the specific unit configuration.

With respect to claims 28-29:

Honda et al disclose a rectangular battery including a plurality of cathode plates and anode plates alternately superposed via a separator to face each other. The cathode plates and the anode plates are consecutively packed with the separator and being folded at a separator fusing portion between the plates (ABSTRACT). It is disclosed that the anode plate is formed by a copper foil having both or one side thereof coated with a mixed anode agent; the separator is composed of a polymeric material and the rectangular battery has at least the cathode plates or the anode plates respectively packed with the separator, intrusion of the powder of the cathode plate and the anode plate into each other is prevented (COL 2, lines 25-38). It is disclosed that the layered product formed by the electrode plates and the separator is inserted into a rectangular battery casing and then a liquid electrolyte is filled therein (COL 1, lines 15-20). It is disclosed the electrode are enveloped by or packed between the separators and the packed electrode plates being folded at the separator fusing portion (COL 1, lines 60-67).

Figures 18 and 20 below illustrate battery embodiments

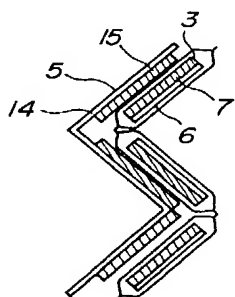


FIG. 18

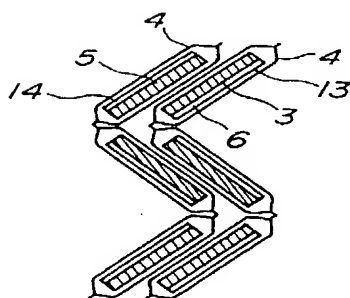


FIG. 20

Examiner's note: the claim language "means for applying substantially uniform pressure..." has now been construed as invoking the 35 USC 112, 6th paragraph because it does not meet, at least, two of the 3-prong analysis conditions due to the over-modified structure for achieving the specified function (See MPEP 2181). That is, a) the claim limitations does not strictly use the phrase "means for" (i.e. the claim recites "means being provided for") and b) the phrase "means for" must not be modified by sufficient structure, material or acts for achieving the specified function as instantly claimed.

As for claims 36, 42-45:

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Honda et al disclose that the separator is formed of a porous polymeric material having holes, submicron to several micro diameter, opened therein for passing ions wherein the it is a sheet-like film of polypropylene or polyethylene (COL 4, lines 7-12/ COL 2, lines 30-33).

Examiner's note: as to the limitation "capable of swelling ...", it is contended that this limitation does not distinguish over prior art because the recitation that a element/feature/member is "capable of..."perform a function is not a positive limitation but only requires the ability to so perform.

Regarding claim 41:

It is noted that the battery enclosure itself of Honda et al imparts the necessary pressure and elasticity to ensure adequate electrical contact therein. *Thus, this function is inherent to the battery assembly per se.*

Honda et al disclose a battery according to the afore-described aspects. However, Honda et al do not expressly disclose the specific means for applying pressure; and the specific helical/spiral configuration.

With respect to claims 28 and 34:

Pyszczel et al teach an electrochemical cell having mechanical shock tolerance (TITLE) having a resilient member such as a resilient pad or a wave spring disposed therein (ABSTRACT). It is further disclosed that between each insulating sheet 50 and the corresponding end wall 16 and 18 is disposed a wave spring 52 for dissipating the mechanical forces acting to otherwise undersirably cause axial movements of the spirally-wound assembly 30 (COL 3, lines 12-18). It is disclosed that by use of wave springs for dissipating the mechanical shocks, a reliable shock-absorbing cell may be assembled easily, quickly, and

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inexpensively. It should be understood that this invention is not limited to the use of wave springs for shock-absorbing, but other suitable springs or other resilient members for dissipating the mechanical forces are meant to come within the scope of the present invention (COL 3, lines 19-28).

With respect to claim 35:

Pyszczel et al disclose a spirally-wound electrochemical cell having a resilient member such as a spring disposed between the spirally wound electrode and separator assembly (ABSTRACT).

In view of these disclosures, it would have been obvious to one skilled in the art at the time the invention was made to use the specific means for applying pressure of Pyszczel et al in the battery of Honda et al because Pyszczel et al disclose a wave spring 52 is disposed therein for dissipating the mechanical forces acting to otherwise undesirably cause axial movements of the spirally-wound assembly. Pyszczel et al further discloses that by use of wave springs for dissipating the mechanical shocks, a reliable shock-absorbing cell may be assembled easily, quickly, and inexpensively; and it should be understood that this invention is not limited to the use of wave springs for shock-absorbing, but other suitable springs or other resilient members for dissipating the mechanical forces are meant to come within the scope of the present invention. *Thus, Pyszczel et al at once envisage the use of pressure applying means such as a spring for mechanical shock tolerance in electrochemical cells.*

As to the specific helical/spiral configuration, it would have been obvious to one skilled in the art at the time the invention was made to use the specific helical/spiral configuration of Takamura et al in the battery of Honda et al as Takamura et al divulge that such specific

helical/spiral configuration allows to effectively dissipate mechanical forces acting to otherwise cause axial movements of the electrode assembly. Thus, it enhances mechanical stability of the battery assembly.

6. Claims 29, 30, 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Honda et al 5580676 in view of Pyszczel et al 5756229 as applied to claim 28 above, and further in view of Schulze et al 5993618.

Honda et al and Pyszczel et al are applied, argued and incorporated herein for the reasons above. However, the preceding prior art does not expressly disclose the specific flexible fabric electrode support and its thickness.

Schulze et al disclose an electrochemical cell in which a gas-diffusion electrode is provided as porous cathode wherein the carrier material is planar woven carbon fiber fabric (COL 7, lines 14-25). It is also disclosed that finished electrode is catalyzed (COL 7, lines 15-25). It is also disclosed that the fabric thickness is of 0.36 mm or 0.4-0.5 mm for a finished electrode (COL 7, lines 14-25). *Thus, the finished catalyzed electrode has a layer thickness ranging from 0.04-0.14 mm.*

In view of the above, it would have been obvious to one skilled in the art at the time the invention was made to use the specific flexible fabric electrode support of Schulze et al in the battery of Honda et al as Schulze et al disclose that such fabric electrode supports as well as the finished catalyzed electrode provide sufficient mechanical stability and structural integrity so as to be used in electrode applications.

As to the specific thickness, it would have been obvious to a skilled artisan at the time the invention was made to make Honda et al-Pyszczel et al' electrode by having the claimed thickness because even though Schulze et al's electrode thickness does not overlap or lie inside the claimed thickness a prima facie case of obviousness exist where the claimed ranges and prior art ranges do not overlap but are close enough that one skilled in the art would have expected them to have the same properties. *Titanium Metal Corp. of America v. Banner* 227 USPQ 773. Moreover, the normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine a satisfactory and optimum thickness.

7. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Honda et al 5580676 in view of Pyszczel et al 5756229 as applied to claim 28 above, and further in view of Aihara et al 2003/0170536.

Honda et al and Pyszczel et al are applied, argued and incorporated herein for the reasons above. However, the preceding prior art does not expressly disclose the specific pair of active material.

Aihara et al disclose batteries such as silver-zinc batteries as well as nickel-cadmium batteries (SECTION 0048).

In view of the above, it would have been obvious to one skilled in the art at the time the invention was made to use the specific pair of active material of Aihara et al in the battery of Honda et al-Pyszczel et al because Aihara et al disclose that, generally, batteries' teachings are especially effective and not limiting to specific applications, that is to say, batteries' teachings are applicable to either primary batteries such as silver-zinc batteries as well as other type of

batteries such as nickel-cadmium batteries. Thus, Aihara et al envision the interchangeability of specific battery applications, components and teachings regardless of the particular battery chemistry.

8. Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Honda et al 5580676 in view of Pyszczel et al 5756229 as applied to claim 28 above, and further in view of Takamura et al 4407907.

Honda et al and Pyszczel et al are applied, argued and incorporated herein for the reasons above. However, the preceding prior art does not expressly disclose the specific grain/particle size.

Takamura et al disclose an electrode bodies comprising sintered powder material having a particle size of from 0.2-40 μm (COL 1, line 20-30).

In view of the above, it would have been obvious to one skilled in the art at the time the invention was made to use the specific grain/particle size of Takamura et al in the battery of Honda et al and Pyszczel et al as Takamura et al disclose that in electrodes have been common to use sintered powder material having the claimed particle size as it provides electrode structures having effective interface for discharge reactions and thus possible to obtain a large current generation.

9. Claims 38 and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Honda et al 5580676 in view of Pyszczel et al 5756229 as applied to claim 28 above, and further in view of Takamura et al 4407907.

Honda et al and Pyszczel et al are applied, argued and incorporated herein for the reasons above. However, the preceding prior art does not expressly disclose the specific carbon fiber associated to the silver.

Takamura et al disclose an electrode body formed by integrating carbon powder carrying a catalyst such as silver (COL 1, lines 48-55).

In view of the above, it would have been obvious to one skilled in the art at the time the invention was made to use the specific carbon fiber associated to the silver of Takamura et al in the battery of Honda et al and Pyszczel et al as Takamura et al disclose that electrode bodies integrating the claimed material have a low oxygen reduction over-voltage.

10. Claims 39-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Honda et al 5580676 in view of Pyszczel et al 5756229 as applied to claim 28 above, and further in view of Faris et al 2003/0143446.

Honda et al and Pyszczel et al are applied, argued and incorporated herein for the reasons above. However, the preceding prior art does not expressly disclose the specific metal coating.

Faris et al disclose electrochemical cell system wherein the anode and the cathode have a particular degree of porosity e.g. 50 % (SECTION 0172, 0185-0186). Faris et al also disclose applying a thin metal layer of about 1-10 microns or thin metal layers applied to the anode surface including also zinc powder applied as a coating upon the surface thin metal layer (SECTIONS 0185-0187).

In view of the above, it would have been obvious to one skilled in the art at the time the invention was made to use the specific metal coating of Faris et al in the battery of Honda et al as

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Faris et al disclose that the function of the thin metal layer is to provide efficient current collection at the anode surface.

11. Claim 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over Honda et al 5580676 in view of Pyszczel et al 5756229 as applied to claim 28 above, and further in view of Hampden-Smith et al 6689186.

Honda et al and Pyszczel et al are applied, argued and incorporated herein for the reasons above. However, the preceding prior art does not expressly disclose the specific grid body and material; and the separator structure.

Hampden-Smith et al disclose electrode bodies being made as grid wherein the anode grid made of zinc, and the cathode grid using silver (COL 52, lines 15-35).

Hampden-Smith et al also disclose an electrochemical cell comprising a plurality of separator layers (COL 52, lines 8-20).

In view of the above, it would have been obvious to one skilled in the art at the time the invention was made to use the specific grid body and material of Hampden-Smith et al in the battery of Honda et al and Pyszczel et al as Hampden-Smith et al disclose that the claimed grid body and material are suitable for use in preparing storage batteries; additionally, it is taught that anodes/cathode are typically made of specific material and structures. Thus, Hampden-Smith et al directly teach the use of the specific grid electrode body and material. As far as the separator structure, it would have been obvious to one skilled in the art at the time the invention was made to use the separator structure of Hampden-Smith et al in the battery of Honda et al and Pyszczel et al as Hampden-Smith et al disclose that such separator structure acts as a semi-permeable membrane assuring adequate contact of the anode and cathode with the electrolyte.

Response to Arguments

12. Applicant's arguments with respect to newly submitted claims 28-46 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Raymond Alejandro whose telephone number is (571) 272-1282. The examiner can normally be reached on Monday-Thursday (8:00 am - 6:30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Raymond Alejandro
Examiner
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A handwritten signature in black ink, appearing to be 'RAM', with a long horizontal line extending from the end of the signature.